

## Section 6-3: Write and Graph Equations

**By the end of this lesson, you should be able to answer:**

- How do you write equations of lines using slope, intercepts, and points?
- How do you graph a line given the equation?

**Where you might see this in the real world:**

- Finance, sports, transportation, recreation

Define the following terms:

1. Linear equation
2.  $y$ -intercept
3. Slope-intercept form
4. Point-slope form

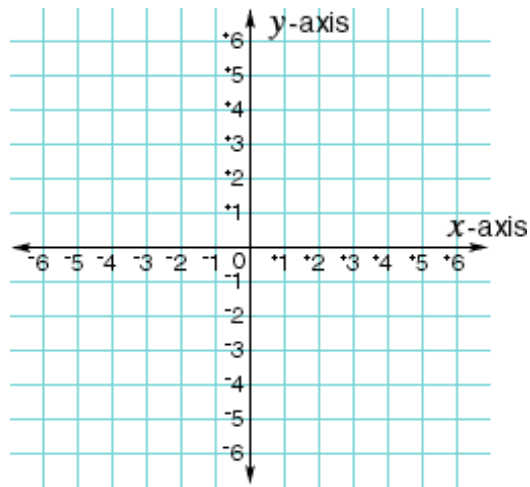
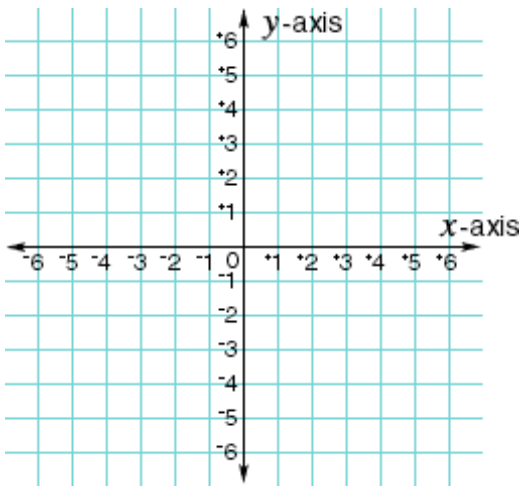
In Section 6-2, we learned how to graph an equation if we only had a point and a slope. First we plotted the point then we used the slope to find the rest of the points, which were then connected with a straight line. We can also use this information to find the equation of the line.

In the slope-intercept form, we have two things given to us: the \_\_\_\_\_ and the \_\_\_\_\_. These are the only two things we need to put an equation in the slope-intercept form, and this is also where it got its name from. In the slope-intercept form,  $m$  stands for \_\_\_\_\_ and  $b$  stands for \_\_\_\_\_.

Example 1: Identify the slope and y-intercept for each line and graph the lines on the same set of axes.

a.  $y = \frac{1}{2}x$

b.  $2y - x = -6$

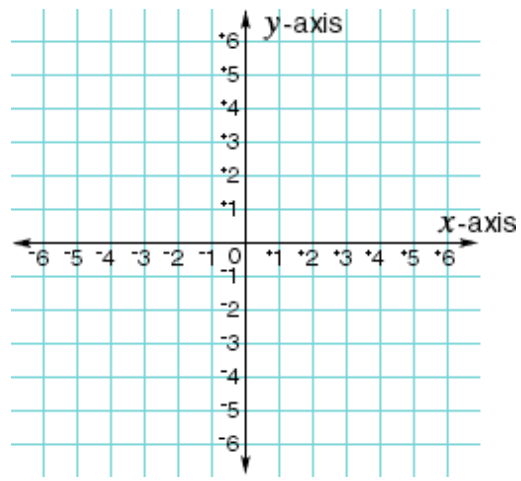
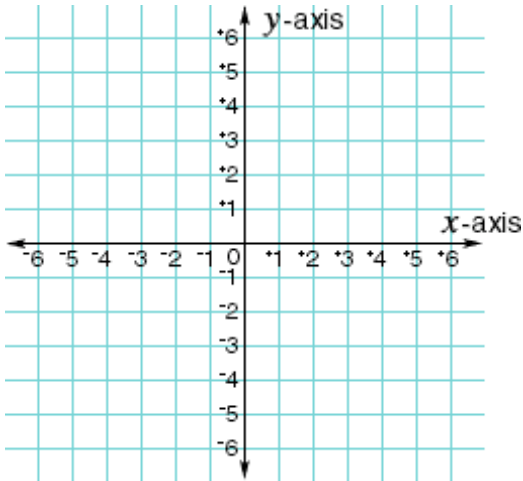


To use the slope-intercept form, you need to have the slope and the y-intercept. If you have any point other than the y-intercept, then you cannot just plug in for  $b$ . You will need to either use the slope-intercept form to find  $b$  (which takes quite a bit of time), or you could use the point-slope form. It is called point-slope because the two things you need to use this are a \_\_\_\_\_ and the \_\_\_\_\_.

Example 2: Write the equation of the line from the given information, choosing which form you would need before you begin. Then graph the line.

a.  $m = -2$ ,  $(0, 4)$

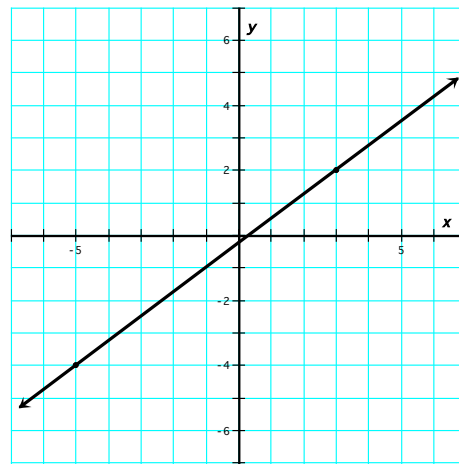
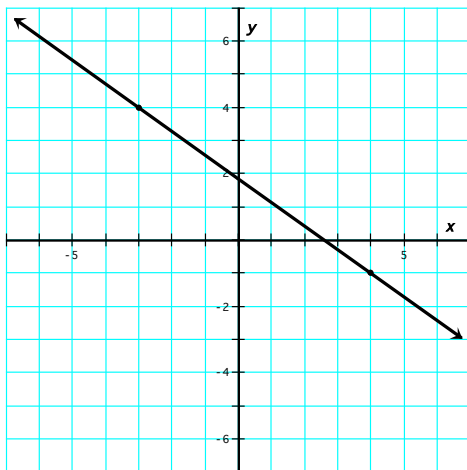
b.  $m = 3/4$ ,  $(8, -2)$



Example 3: Write the equation for each line.

a.

b.



Homework:

"We can have facts without thinking but we cannot have thinking without facts." – John Dewey